

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

VOLKER SCHMIDT

Application No.: 08/836,369

Filed: October 20, 1997

For: TEMPERATURE-
MEASUREMENT INSTRUMENT WITH
DIFFRACTIVE OPTICS

Examiner: A. Hirshfeld

Art Unit: 2859

APPELLANT'S BRIEF UNDER
37 C.F.R. § 1.192

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The following is appellant's Appeal Brief submitted in triplicate pursuant to 37 CFR 1.192(a). The Commissioner is hereby authorized to charge the \$310.00 filing fee or any additional fees, as well as credit any overpayment, to the undersigned's Deposit Account No. 20-1430, as noted on the attached fee transmittal sheet. Appellants reserve the right to request an oral hearing pursuant to 37 CFR 1.194 following receipt of the Examiner's Answer.

REAL PARTY IN INTEREST:

RAYTEK, INC. is the real party in interest as the assignee of the above-identified application.

RELATED APPEALS AND INTERFERENCES:

No other appeals or interferences are known which will directly affect or be affected or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS:

Claims 1, 3 and 82 remain pending in this application and have been finally rejected. Appellant appeals the final rejection of claims 1, 3 and 82.

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STATUS OF AMENDMENTS:

No amendments have been filed subsequent to the final rejection.

SUMMARY OF THE INVENTION:

The present invention, as defined, for example, in claim 1, includes a sighting arrangement having a laser aligned to illuminate a diffractive optical system to provide a diffraction pattern in the form of a light intensity distribution to identify and outline the size of the measurement spot by means of visible light. Examples of the patterns generated are depicted in Figs. 2c, 2e, 2d, 2g and 3e.

ISSUE:

Whether the rejection of any of the pending claims under 35 U.S.C. §103 as being unpatentable in view of Hollander or the German patent document 32 13 955 in view of British patent document 2 203 537 is proper.

GROUPING OF THE CLAIMS:

It is Appellant's position that the claims stand or fall together.

THE REJECTION:

The USPTO issued a final rejection of the claims (mailed 1/19/00) under 35 U.S.C. §103(a) as being unpatentable in view of Hollander ("the first rejection") and as being unpatentable over German patent document 32 13 955 in view of British patent document 2 203 537 ("the second rejection").

The Cited References

1. Hollander

The reference Hollander discloses a radiometer with a laser sighting arrangement for outlining only the periphery of the energy zone imaged onto the IR sensor. For example, Figs. 2, 3, 4, 6, and 10 depict complicated mechanical devices for manipulating

the laser optics to form a continuous circle outlining only the periphery of the energy zone. Fig. 2 depicts a two-component laser for generating separate beams outlining only the periphery of the energy zone. Fig. 10 depicts a complicated structure including a bundle of fibers for generating a plurality of spots outlining only the periphery of the energy zone. Only Figs. 2 and 10 depict structures for splitting a laser beam into components.

2. German patent document 32 13 955

The German document discloses a laser sighting arrangement utilizing a single laser and a beam-splitter including a beam-splitter 8 in the form of a half-silvered mirror or prism for splitting a single beam into two components. Deflecting mirrors 7 and 7' align the two beams to define the measurement spot at different distances.

3. British patent document 2 203 537

The British document discloses a sighting arrangement having a visible light source which emits a cone of light. A masking element is placed in front of the light source to block out light which would be projected onto the energy zone. The image of the masking spot coincides with the energy zone so that the energy zone is surrounded by a ring of light.

The Examiner's Reasoning

With regard to the first rejection, the examiner states that in Hollander, at figs. 5 and 10, the laser device includes a means for simultaneously emitting a plurality of more than two laser beams towards the surface to outline the energy zone. Examiner notes that, at col. 6, lines 49-51, Hollander states that individual lasers or laser splitting devices can be used to split a single laser beam and can be used to create multiple beams. The examiner admits that Hollander does not teach a sighting arrangement having a diffractive optical system, but concludes that replacing the beam-splitter of Hollander with a diffractive optical system would have been obvious because such systems are equivalent and alternative devices for creating an image from a beam of light.

With regard to the second rejection, the examiner states that it would have been obvious to modify the system disclosed in the German document by replacing the beam-splitter thereof with a system that creates a circle to outline the energy spot, because the British

document teaches that a circular outline of the energy zone provides valuable information. It is also stated that to utilize a diffractive optical system to generate the circular outline is obvious because all beam-splitters are alternative and equivalent devices for creating a plurality of beams from a single beam so that any beam-splitter could function in the device disclosed by the German document.

ARGUMENT:

1. Summary of the Argument

35 U.S.C. §103(a) states that a patent may not be obtained if "differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious...to a person of ordinary skill in the art". The subject matter claimed in the appealed claims is completely different, in structure and function, than the subject matter disclosed by the cited reference. There is no suggestion or teaching in the cited reference that would suggest or make obvious the claimed subject matter to a person of ordinary skill in the art.

2. The first Rejection

Differences Between the Subject Matter Sought to be Patented and the Cited Reference

As admitted by the examiner, there is no teaching in Hollander of a sighting arrangement for a radiometer having a diffractive optical system. However, the examiner states, without support, that the claimed diffractive element and the beam splitter of Hollander are equivalent and alternative devices for creating an image from a beam of light.

In the quoted language of Hollander it is stated in the summary of the invention that "The two or more laser beams could be derived from a dedicated laser to each beam or by means of beam splitters. This can be accomplished by mirrors, optics and fiber optics." Further, as stated above, the only disclosure in Hollander of providing two or more laser beams is in Fig. 5, where a laser has two components, or Fig. 10, where a bundle of optical fibers is used to generate multiple components from a single laser beam.

The examiner has used the applicant's teaching that a diffractive optical system can be utilized to produce a diffraction pattern to outline the energy zone as the basis for the position that the diffractive optical system is an equivalent structure to the beam splitter disclosed in Hollander. However, use of the applicant's own disclosure as a roadmap to combine prior art references is forbidden. *Union Carbide Corp. v. American Can Co.*, 220 USPQ 584 (CAFC 1984).

Since there is no suggestion in the references of utilizing a diffractive optical system to generate a light pattern to define the energy zone, it is believed that the examiner is applying an obvious-to-try standard. The CAFC has explained the "obvious to try" standard as follows:

The admonition that "obvious to try" is not the standard under § 103 has been directed mainly at two kinds of error. In some cases, what would have been "obvious to try" would have been to vary all parameters or try each of numerous possible choices until one possibility arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful. [Citations omitted.] In others, what was "obvious to try" was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it. [Citations omitted.]

In re O'Farrell, 853 F.2d 894, 903, USPQ2d 1673 (CAFC 1988).

The present facts are entirely consistent with either of these situations, where the application of an obvious to try standard is improper. First, if Hollander is read to suggest the use of a generic beam splitter, then it offers no suggestions as to which of many types of beam splitters would be particularly well suited to the instant applications. Second, Hollander suggests that two or more beams can be derived utilizing a beam splitter and discloses a beam splitter having discrete structures for forming each beam, in Fig. 5 the arms of the laser splitter and in Fig. 10 the multiple optical fibers. In the current application, the inventors explored a

new technology that seemed to be a promising field of experimentation not suggested or taught by the reference.

Indeed, to the extent Hollander teaches anything, it teaches away from the solution to the problem taught by the present invention. The beam splitter embodiments of Hollander, shown in Figures 5 and 10, each involve structures in which the individual light beams are separately directed towards the outline of the energy zone or measurement spot through conduits. In Figure 5, components 312A and 312B direct the beams towards the "perimeter of the energy zone." Hollander, 5:41-46. In Figure 10, the individual strands of optical fiber direct the beams towards the energy zone. Hollander, 7:26-36. Both these approaches have the obvious advantage that the beams may be individually and precisely aimed in the desired direction. Hollander therefore teaches the use of a beam splitter that facilitates, and to some extent, depends upon, guiding the beam through such conduits.

Applicants' diffractive optical system, on the other hand, is not easily integrated with an arrangement of separate conduits. As stated in the specification, the beams generated by the diffractive optical system are not actually separate beams but rather, a pattern of intensity distributions created by interference of an object and a reference wave. The examiner nowhere suggests how such an interference pattern could be captured in and transmitted through the separate channels shown in Hollander and indeed, it would appear a tricky feat at best. By the same token, the separate beams in applicants' invention cannot be separately aimed. The breadth or spread of the cone formed by beams emitting from the instrument may be modified to some extent by the optical element 5c, but the invention depends upon the diffraction grating to create a pattern that is inherently accurate in shape. In this way, applicants have developed a technology that is not only different from but discouraged by the teachings of Hollander.

3. The Second Rejection

Differences Between the Subject Matter Sought to be Patented and the Cited Reference

As in the first rejection, the examiner admits there is no teaching in the references of a sighting arrangement for a radiometer having a diffractive optical system.

However, the examiner states, without support, that the claimed diffractive element and the beam splitter of Hollander are equivalent and alternative devices for creating an image from a beam of light.

The German patent document discloses a beam splitter formed of mirrors that generates two beams to outline the energy spot. There is no teaching of how the system could be modified to generate multiple beams and no suggestion of using a diffractive optical system to generate a light pattern to outline the energy zone. The British reference is cited to show the advantage of outlining the energy zone.

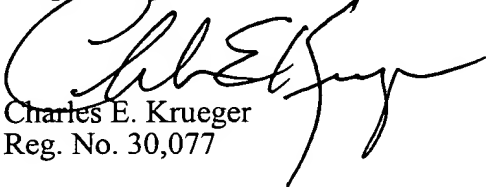
The argument set forth for the first rejection is incorporated by reference here. Again, the technology of the claimed invention is not suggested or taught by the references.

CONCLUSION:

None of the references disclose the features of the pending claims. The examiner has used the applicant's own disclosure as a guide to conclude that a diffractive optical system is equivalent to the beam splitter disclosed in Hollander.

In view of the above, it is respectfully asserted that the pending claims are patentable.

Respectfully submitted,


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Attachment: Appendix – Pending Claims



APPENDIX

1. Device for temperature measurement comprising:
 - a) a detector for receiving heat radiation emanating from a measurement spot on an object of measurement,
 - b) an optical system for imaging the heat radiation emanating from the measurement spot onto the detector
 - c) and a sighting arrangement having a laser aligned to illuminate a diffractive optical system to produce a diffraction pattern in the form of light intensity distribution for identifying and outlining the position and size of the measurement spot on the object of measurement by means of visible light.

3. Device as claimed in claim 1, wherein the diffractive optical system is formed by a holographic element.

82. The device of claim 1 where said diffractive optical system generates a circular arrangement of more that two beams to outline and identify the energy zone.

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